IN THE CLAIMS:

Please cancel claims 1-24 and 27-41 without prejudice or disclaimer of the subject matter set forth therein.

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1-24. (canceled)

25. (previously presented) *Saccharomyces cerevisiae* strains selected from the group consisting of H1791 (VTT C-98298, DSM 12213), H1795 (VTT C-98300, DSM 12214), H1803 (VTT C-98302, DSM 12215), H2193 (VTT C-99317, DSM 12722), H2195 (VTT C-99320, DSM 12723) and H2222 (VTT C-99322, DSM 12724).

26. (previously presented) *Schizosaccharomyces pombe* strains selected from the group consisting of H2369 (VTT C-99323, DSM 12725) and H2370 (VTT C-99324, DSM 12726).

27-41. (canceled)

Please add the following new claims:

42. (New) A method for improving yield of a product from a production process,

wherein said product is produced in a cell wherein the production process normally results in a depletion in the amount of at least one of NAD and NADPH cofactors,

wherein said method comprises culturing a microorganism transformed with one or more polynucleotides that express a protein,

wherein said protein oxidizes one or more of NADH and NADPH or said protein reduces one or more of NAD and NADP,

thereby obtaining an increase in the yield of said product compared to the yield from the process using the untransformed microorganism,

and wherein said product is selected from the group consisting of ethanol, xylitol, lysine, alanine, cysteine, aspartate, asparagine, glycine, isoleucine, leucine, methionine, proline, arginine, serine, threonine, valine, tryptophan and polyhydroxybutyrate.

43. (New) A method for improving yield of a product from a production process,

wherein said product is produced in a cell wherein the production process normally results in a depletion in the amount of at least one of NAD and NADPH cofactors,

wherein said method comprises culturing a microorganism transformed with one or more polynucleotides that express a protein,

wherein said protein oxidizes one or more of NADH and NADPH or said protein reduces one or more of NAD and NADP thereby obtaining an increase in the yield of said product compared to the yield of the process using the untransformed microorganism and

wherein said one or more polynucleotides comprise a polynucleotide that encodes a protein selected from the group consisting of glutamate dehydrogenase, malic enzyme, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1-dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase.

44. (New) The method according to claim 42,

wherein said one or more polynucleotides comprise a polynucleotide that encodes a protein selected from the group consisting of glutamate dehydrogenase, malic enzyme, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1- dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase.

45. (New) The method of claim 43, wherein the product is produced in an amount that is at least 5 % higher than the amount produced in the process using a corresponding untransformed microorganism under the same conditions.

46. (New) The method of claim 43 wherein the product is produced from carbohydrate.

47. (New) The method of claim 43 wherein the product is ethanol.

48. (New) The method of claim 42, in which the microorganism is a yeast cell.

[redacted]

49. (New) The method of claim 43, wherein the microorganism is a yeast cell.

50. (New) A method for maintaining either or both of a ratio of a NADH/NAD cofactor pair at about 0.9 or of a NADPH/NADP cofactor pair at about 3.2 in a yeast cell during a biotechnological process comprising culturing a microorganism transformed with one or more polynucleotides that express a protein, wherein said protein oxidizes one or more of NADH and NADPH or said protein reduces one or more of NAD and NADP in an amount that maintains the ratio of either or both of the NADH/NAD or NADPH/NADP cofactor pairs.

51. (New) A method for maintaining a ratio of either of the NADH/NAD cofactor pair at about 0.9 or NADPH/NADP cofactor pair at about 3.2 in a yeast cell during a biotechnological process comprising culturing a yeast cell transformed with one or more nucleic acids to express one or more enzymes that act on a substrate that undergoes the following cyclic series of reactions:

$NADH + S \leftrightarrow SH_2 + NAD$

$SH_2 + X' \leftrightarrow ZH_2 + Y'$

[redacted]

$NADP + ZH_2 \leftrightarrow S + NADPH$

wherein S is the substrate, SH_2 is a reduced substrate, X' and Y' are intermediates, and ZH_2 is a reduced product.

52. (New) The method of claim 51, wherein said method produces a product selected from the group consisting of ethanol, xylitol, lysine, alanine, cysteine, aspartate, asparagine, glycine, isoleucine, leucine, methionine, proline, arginine, serine, threonine, valine, tryptophan and polyhydroxybutyrate.

53. (New) The method of claim 51, wherein said one or more polynucleotides express one or more enzymes selected from the group consisting of glutamate dehydrogenase, malic enzyme, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1-dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase.

54. (New) A method of preventing depletion of one or more of NAD, NADH, NADP, and NADPH in a cellular process that normally results in depletion of one or more of NAD, NADH, NADP,

and NADPH, wherein the method comprises culturing a microorganism transformed with one or more polynucleotides that express a protein, wherein said protein oxidizes one or more of NADH and NADPH or said protein reduces one or more of NAD and NADP thereby preventing depletion of one or more of NAD, NADH, NADP, and NADPH.

55. (New) A method of preventing depletion of one or more of NAD, NADH, NADP, and NADPH in a cellular process that normally results in depletion of one or more of NAD, NADH, NADP, and NADPH, wherein the method comprises culturing a microorganism transformed with one or more polynucleotides that express a protein, wherein said protein acts on a reduced substrate that undergoes the following cyclic series of reactions:

$NADH + S \leftrightarrow SH_2 + NAD$

$SH_2 + X' \leftrightarrow ZH_2 + Y'$

$NADP + ZH_2 \leftrightarrow S + NADPH$

wherein S is the substrate, SH_2 is the reduced substrate, X' and Y' are intermediates, and ZH_2 is a reduced product.

[redacted]

56. (New) The method according to claim 42, wherein an amount of at least one of the cofactors is increased.

57. (New) A method for improving the yield of an industrial product or the specific rate of production of an industrial product or both in a production process wherein said industrial product is produced by a cell wherein the production process normally results in a depletion in the amount of at least one of NAD, NADH, NADP, and NADPH cofactors, wherein said method comprises culturing a microorganism transformed with one or more nucleic acids to express one or more enzymes that catalyze one or more steps in one of the following cyclic series of reactions cycle 1 or cycle 2:

cycle 1:

Enzyme 1: $NADH + S \leftrightarrow SH_2 + NAD$

Enzyme 2: $NADP + SH_2 \leftrightarrow S + NADPH$

wherein S and SH_2 are, respectively, the oxidized and reduced substrates of Enzyme 1 and Enzyme 2, which are both dehydrogenases

or cycle 2:

[redacted]

Enzyme 3: $NADH + S \leftrightarrow SH_2 + NAD$

Enzyme 4: $SH_2 + X \leftrightarrow Y + ZH_2$

Enzyme 5: $NADP + ZH_2 \leftrightarrow S + NADPH$

wherein S and SH_2 are, respectively the oxidized and reduced substrates of Enzyme 3, which is a dehydrogenase; SH_2, X, Y and ZH_2 are substrates of Enzyme 4, which is not a dehydrogenase; and ZH_2 and S are, respectively, reduced and oxidized substrates of Enzyme 5, which is a dehydrogenase.

58. (New) The method according to claim 57, wherein the enzymes are dehydrogenases.

59. (New) The method according to claim 58, wherein the dehydrogenases are selected from the group consisting of malic enzyme, glutamate dehydrogenase, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1-dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase.

60. (New) The method according to claim 57, wherein the industrial product is ethanol.

61. (New) The method according to claim 58, wherein the industrial product is ethanol.

62. (New) A method for improving yield of a product from a process wherein said product is produced in a cell wherein said method comprises culturing a microorganism transformed with one or more polynucleotides that express a protein, wherein said protein oxidizes one or more of NADH and NADPH or said protein reduces one or more of NAD and NADP thereby obtaining an increase in the yield of said product compared to the yield of the process using the untransformed microorganism and
wherein said one or more polynucleotides comprise a polynucleotide that encodes a protein selected from the group consisting of glutamate dehydrogenase, malic enzyme, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1- dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase.

63. (New) The method of claim 62, wherein said product is selected from the group consisting of ethanol, xylitol, lysine, alanine, cysteine, aspartate, asparagine, glycine, isoleucine,

leucine, methionine, proline, arginine, serine, threonine, valine, tryptophan and polyhydroxybutyrate.

64. (New) A method for improving yield of a product from a production process,

wherein said product is produced in a cell wherein the production process normally results in an unbalanced production of at least one of NAD, NADH, NADP, and NADPH cofactors,

wherein said method comprises culturing a microorganism transformed with one or more polynucleotides that express a protein,

wherein said protein oxidizes one or more of NADH and NADPH or said protein reduces one or more of NAD and NADP,

thereby obtaining an increase in the yield of said product compared to the yield of the process using the untransformed microorganism,

and wherein said product is selected from the group consisting of ethanol, xylitol, lysine, alanine, cysteine, aspartate, asparagine, glycine, isoleucine, leucine, methionine, proline, arginine, serine, threonine, valine, tryptophan and polyhydroxybutyrate.

65. (New) The method of claim 64, wherein said one or more polynucleotides comprise a polynucleotide that encodes a protein selected from the group consisting of glutamate dehydrogenase, malic enzyme, aldehyde dehydrogenase, alcohol dehydrogenase, malate dehydrogenase, glycerol-3-phosphate dehydrogenase, xylose-1-dehydrogenase, glyceraldehyde-3-phosphate dehydrogenase, orotate reductase, and ferredoxin reductase.

[redacted]